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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/715,554      | 11/19/2003  | Sung-Don Park        | 2438-065A           | 7306             |

7590 02/11/2005

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EXAMINER

PARKER, FREDERICK JOHN

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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1762

DATE MAILED: 02/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/715,554

Applicant(s)

PARK, SUNG-DON

Examiner

Frederick J. Parker

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 10/031,611.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11/19/03.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Priority*

1. Acknowledgment is made of applicant's claim for foreign priority under 35

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U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 10/031611, filed on 1/22/02. *Specification*

2. 35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification is replete with terms which are not clear, concise and exact. The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. Examples of some unclear, inexact or verbose terms used in the specification are: (1) p.2, 22-23 (2) p.3, 7-19 (3) p.3, 14-19 (4) p. 5, 24-29.

3. The disclosure is objected to because of the following informalities: P.1, lines 1-2, please update the status of 10/031,611 in the Cross-Reference data; p.3, 10, it is unclear to what temperatures the inks are "heat resistant"; P. 5, 21, "spaying" is a typographic error; P. 5, the use of the relative term "low" to describe the intended CTE's is unclear and undefined (examples do not meet the definition requirement of the PTO); P. 5, 26-27, printing the electrode is contrary to P. 10,1-2 and figure 2 in which electrodes are (apparently mechanically) "attached". Appropriate correction is required.

### *Claim Objections*

4. Claim 1 is objected to because of the following informalities: claim 1: line 9, "15" should be deleted; lines 4,8,9 "for" should be replaced by "forming" or "to form" or other more positive and appropriate language. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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6. Claims 1-3,6-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Claims 1,2,6,7,8 are vague and indefinite because the relative term “thin” doesn’t convey the intended thickness of the conductive film, the term would not be ascertainable to one skilled in the art, and is not appropriately defined by the specification.
- Claim 1 is vague and indefinite because the temperatures to which the ink is “heat resistant” is undefined and unascertainable to one skilled in the art; the claim is further vague and indefinite because on lines 5-6,8,9 it is unclear if the “conductive thin films” of the heating element and electrodes are the same or different; the wording of lines 4-6 and 8-9 render the claim vague and indefinite because the wording is unclear, because neither sets forth a definitive forming step for the element and electrode; line 7, the “removing” step is unclear because the claim never previously requires the ink to be water soluble/ removable.
- Claim 3 is vague and indefinite because the relative term “low” does not convey the intended thermal expansion property, the term would not be ascertainable to one skilled in the art, and is not appropriately defined by the specification.

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7. For the sake of examination, the Examiner interprets separate/ different conductive compositions are applied to form the thin film heating layer and to form the electrode thereon.

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***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 1,3-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hattori et al US 5403616 in view of Takase et al US 5448037.

Hattori teaches forming conductive heating elements on substrates of glass (having a low CTE relative to other oxides or metals), ceramic, etc in which a masking ink is applied to a substrate and dried, cured by heating (which also necessarily pre-heats the substrate material), applying a conducting film-forming composition, heating the coated substrate, and removing residue/ ink by cleaning including water cleaning (col. 4, 28-30). According to col. 3, 39-44, the maskant is oil resistant, and resistant to at least ambient and higher temperatures, meeting the

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limitations of claim 1. As to claim 4, although pre-heating of the substrate occurs at 50-200C, it is well-established that time and temperature are cause-effective variables, such that higher temperatures for shorter times provide equivalent results relative to lower temperatures for longer times.; hence claim 4 is considered to be an obvious variation of the prior art to achieve equivalent results of the prior art.

The order of steps in the process is irrelevant because Applicants' claims do not require a specific order. Further, the claims are open to additional steps by virtue of the open-ended transitional language "comprising".

In table 1 of Hattori, film thicknesses on the order of approximately 0.05 micron (500A) are shown which overlaps the range of claim 7. Similarly, the resistances of 480-2000 of the thin films overlap the range of claim 6. The subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made if the overlapping portion of the thicknesses and resistances disclosed by the reference were selected because overlapping ranges have been held to be a prima facie case of obviousness, see *In re Wortheim* 191 USPQ 90. The application of electrodes, comprising silver, are not taught.

Takase et al teaches forming panel heaters in which a conductive film 52 is formed on the surface of a transparent substrate 51 (e.g. glass), onto which electrodes 53 are screen printed to feed electric powder to the film 52, the electrodes formed of a conductive material, such as silver.

Since the heater of Hattori et al would have been dysfunctional without electrodes to apply a source of electricity to the conductive film, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Hattori et al by incorporating

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printing a conductive electrode as taught by Takase to provide electric power to the conductive coating forming the heating surface.

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11. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hattori et al US 5403616 in view of Takase et al US 5448037 and further in view of Lin US 5725912.

Hattori and Takase et al are cited for the same reasons previously discussed, which are incorporated herein. Although Hattori et al teaches indium/ tin conductive thin-film forming compositions, the specific conductive film forming composition of claim 2 is not cited.

Lin teaches to form electric heating films on low CTE substrates (e.g. glass) using the formulation of col. 2, 35-50, comprising halides of indium and tin, 1-10 wt% of antimony halides and HF, and 20-60 wt% of a medium, specifically water. Since the formulation overlaps that of claim 2, and both are used for identical purposes, it would have been obvious to one of ordinary skill in the art at the time the invention was made to carry out the process of Hattori in view of Takase et al using the conductive thin film formulation of Lin because of the expectation of successfully forming a tin-based electric heating film on low CTE substrates to form thin film heating elements.

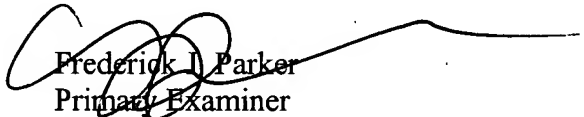
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frederick J. Parker whose telephone number is 571/ 272-1426. The examiner can normally be reached on Mon-Thur. 6:15am -3:45pm, and alternate Fridays.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on 571/272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Frederick J. Parker  
Primary Examiner  
Art Unit 1762

fjp